

## **REMARKS**

Upon entry of the present Amendment, claims 1-17 remain pending in the application, of which claims 1, 3, 5, 11 and 15 are independent.

### **Examiner Interview**

Applicant thanks the Examiner for the helpful and courteous telephonic interview he conducted with applicant's undersigned representative on January 13, 2009. In conjunction with such interview applicant submitted a draft amendatory response for pre-consideration by the Examiners. Also, during such interview applicant's undersigned representative discussed that an elongate light guide as defined in claim 1 is distinct from a coupler 20 as disclosed in by Miller (US Patent 5,967,653) for several reasons, including that:

a light source (e.g., LEDs 12R, 12G, 12B in Fig. 4) is disposed adjacent a short, longitudinal end face of the guide such that light from the source enters the end face, travels in a longitudinal direction of the guide, is reflected off of internal elongate, longitudinally-extending side surfaces 2, 3, and bottom face 1 (which may have a light-scattering pattern formed thereon), and is emitted from elongate, longitudinally-extending, top emitting face 4 in a concentrated line shape (see Figs. 2,3), whereas with Miller's coupler 20 a light source 32 is disposed adjacent a small longitudinal end 23 of the coupler, travels longitudinally through the coupler and exits out of emitting face 22 at the opposite longitudinal end of the coupler in a substantially rectangular shape, which expands after leaving the coupler; and

the sectional shape of the light guide as defined in claim 1 as formed orthogonal (perpendicular) to the longitudinal axis of the guide includes the two opposite parabolas or two oval curves corresponding to the two internal side faces 2, 3 so as to minimize the expansion of light by conversely utilizing the characteristics of the compound parabolic concentrator (CPC) to convert scattered lights extending over a full angle from a limited

area into radiant lights confined to a prescribed emission angle, such as shown in Figs. 2, 3 and discussed in the present specification, whereas with Miller's coupler if a cross section is taken which is orthogonal (perpendicular) to the longitudinal axis of the coupler, the section will be round (if taken close to end 23), rectangular (if taken close to end 22), or a shape with two straight lines which connect two circular arc shapes, such that the light expands after it exits the emitting face 22 of Miller's guide, contrary to the features of claim 1.

Additionally, it was discussed that the present specification does not provide a perspective view of the elongate light guide, which may make it difficult to conceptualize the above distinctions, so that applicant's representative would identify some other existing patents which do show a perspective view of an elongate light guide as presently claimed. Pursuant to such indication, the Examiner's attention is directed to the following US Patents: 6,612,730 – Fig. 2; 6,744,033 – Figs. 2, 10, 19, 21, 23; 6,808,280 – Fig. 8; 7,076,148 – Figs. 2, 4, 6; and 7,088,905 – Figs. 2, 7, 10, 11, 13, 14.

During the interview the Examiner indicated that it appears that light from a light source enters a different face of the light guide as defined in the present claims compared to the coupler of Miller wherein the light enters face 21 and is emitted from face 22 at the opposite longitudinal end of the guide; and that he would further consider applicant's arguments in a formal response to the Office Action. The Examiner also indicated that his indication in the final Office Action that claim 5 contains allowable subject matter may have been erroneous.

#### Allowable Subject Matter

Applicant gratefully acknowledges the Examiner's indication at page 3 of the Office Action that claims 3-6 contain allowable subject matter and would be allowed if rewritten in independent form including all the limitations of the base claim and any intervening claims. Pursuant to the Examiner's indication / suggestion claims 3 and 5 are rewritten in independent form including all

the limitations of the base claim and any intervening claims, whereby claims 3-6 are believed to be allowable. In this regard, and particularly with respect to the Examiner's statement regarding claim 5 during the interview, applicant notes that claim 5 includes all of the limitations of claim 3, as well as the limitation of claim 2, and hence has a more narrow scope than allowed claim 3. Thus, it is believed that claim 5 is also properly allowable.

#### Amendments Presented

Again claims 3 and 5 are rewritten in independent form including all the limitations of the base claim and any intervening claims

Applicant respectfully submits that the above amendments to the claims are fully supported by the original disclosure, including the specification, claims and drawings. Applicant also respectfully submits that no new matter is introduced into the application by the above amendments because all of the subject matter thereof was expressly or inherently disclosed in the original application. Still further, applicant respectfully submits that the above amendments do not raise any new issues for consideration by the Examiner because they simply involve rewriting two claims in independent form.

#### Response to Office Action

The above-identified Office Action has been reviewed, the references carefully considered, and the Examiner's comments carefully weighed. In view thereof, the present Amendment is submitted.

It is contended that by the present Amendment, all bases of objections and rejections set forth in the Office Action have been traversed and overcome. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

#### **Claim Rejections --35 USC §102**

Claims 1-2 and 7-17 are rejected under 35 USC 102(b) as being anticipated by Miller et

al. (US 5,967,653) as briefly set forth at pages 2-3 of the final Office Action. It is the Examiner's position that : Miller's light projector, particularly the parabolic transition format coupler 20 thereof, includes all of the claimed limitations of the light guide as defined in the rejected claims. Specifically, the Examiner asserts that Miller's coupler 20 includes an end face towards the light source 23, an internal face 26, extending longitudinally of the guide (figure 6), a light a sectional shape of the light guide in a direction orthogonal to the longitudinal direction of the light guide has two opposite parabolas and a line segment corresponding to the emitting face 22.

***Applicant's Response:***

Upon careful consideration applicant respectfully traverses such rejection, and submits that claims 1, 2 and 7-17 are patentably distinct over the light projector of Miller because such projector does not include several required features of independent claims 1, 11 and 15, as well as features of the dependent claims. Further, Miller's optical coupling apparatus otherwise functions fundamentally differently than the claimed invention in both structure and function, and fails to address or overcome the problem address by the claimed invention.

In this regard, applicant initially notes that an elongate light guide as defined in the rejected claims is fundamentally distinct from the light projector of Miller in terms of both structure and function. The elongate light guide of the present claims is bar-shaped and typically used as a linear light source in a scanner, photocopier, and the like. On a longitudinal end surface or incident face of the bar-shaped light guide (a longitudinal end tip of the guide) there are provided light sources such as LEDs. On one side face of the bar-shaped light guide (an elongate surface extending in the longitudinal direction of the guide) there is a light-emitting face. On another side face of the bar-shaped light guide opposite to the emitting face (again, an elongate surface extending in the longitudinal direction of the guide) there is a light-scattering face, which may have a light scattering pattern formed thereon.

Furthermore, according to special characteristics of the elongate light guide according to the claimed invention, other elongate side surfaces extending longitudinally of the guide (which extend between the emitting and light-scattering faces) include parabolas or oval curves. Thus, in the presently claimed invention the incident face (through which light from the light sources enter the guide) is not an elongate side face opposite to the elongate light-emitting side face, but is a comparatively short face at one longitudinal end of the guide. This is contrary to the arrangement of Miller's light projector in which the incident face (through which light enters the guide) and the light-emitting face are at opposite longitudinal ends of the coupler 20. Therefore, the relationship between the traveling direction of light from the incident face into the light guide and the position of the emitting face for the claimed invention is quite different from that of Miller's coupler, and it is clear that Miller's coupler does not anticipate (or make obvious) the features of the claimed light guide.

For example, Miller's coupler 20 is not an elongate light guide which receives light through a longitudinal end thereof and ultimately outputs light *in a line shape* from an emitting face thereof which extends in the longitudinal direction of the elongate guide as required by each of the rejected claims. Rather, Miller's coupler 20 is a relatively narrow member having a generally parabolic shape, receives light through a small circular, flat surface 21 at one longitudinal end thereof, and outputs the light through an opposite longitudinal end 22 thereof having a small, rectangular, flat surface such that the outputted light has a compact, rectangular shape, which is not in a line shape.

Further, given the narrow nature of Miller's coupler 20, as well as the four flat surfaces formed on the sides of the coupler adjacent its rectangular longitudinal end surface 22, it is clear that the sectional shape of the coupler *in a direction orthogonal to the longitudinal direction thereof* would not include two opposite parabolas or two oval curves, a line segment

which connect focal points of the two opposite parabolas or two oval curves, and a line segment which corresponds to the emitting face, as required by each of the present claims. Rather, the sectional shape of Miller's coupler in a direction orthogonal to the longitudinal direction thereof would (depending on where the sectional view is taken) be one of : rectangular, circular, or a shape with two flat sides connecting two other sides shaped as *circular arcs*. Moreover, given that light enters and exists the longitudinal ends of the coupler, the end face 21 does not correspond to the focal points of the two curved sides of Miller's coupler, contrary to the requirement of each of the present claims.

Miller also fails to disclose or suggest several features required by various ones of the claims, including : a line segment which connects focal points of the two opposite parabolas or two oval curves, which corresponds to the bottom face of guide opposite to the emitting face, and has a light scattering pattern thereon such as required by claims 8, 11, and 17; a side face of the light guide on a side of said emitting face which is substantially parallel to the optical axis as defined in claim 2; etc.

Based on the foregoing, applicant respectfully submits that that the Examiner has failed to establish prima facie anticipation of claims 1, 2, and 7-17 under 35 USC §102. Accordingly, applicant respectfully requests that the rejection be reconsidered and withdrawn in relation to the present claims.

### **Conclusion**

Based on all of the foregoing, applicant respectfully submits that all of the objections and rejections set forth in the Office Action are overcome, and that as presently amended, all of the pending claims are believed to be allowable over all of the references of record, whether considered singly or in combination.

Applicant requests reconsideration and withdrawal of the rejections of record, and allowance of the pending claims. The application is believed to be in condition for allowance and a notice to this effect is earnestly solicited.

Applicant is paying the fee (\$440) for the presentation of 4<sup>th</sup> and 5<sup>th</sup> independent claims concurrently with the submission of this Amendment via the US PTO's EFS system.

If the Examiner is not fully convinced of the patentability of all of the claims now in the application, applicant respectfully requests that the Examiner telephonically contact applicant's undersigned representative to expeditiously resolve any issues remaining in the prosecution of the application.

Entry of the present Amendment is respectfully requested under 37 CFR 1.116 on the grounds that: the Amendment does not raise any new issues for consideration by the Examiner, but only rewrites two of the dependent claims in independent form pursuant to the Examiner's suggestion; and the Amendment is believed to place the application in condition for allowance.

Favorable reconsideration is respectfully requested.

Respectfully submitted,



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